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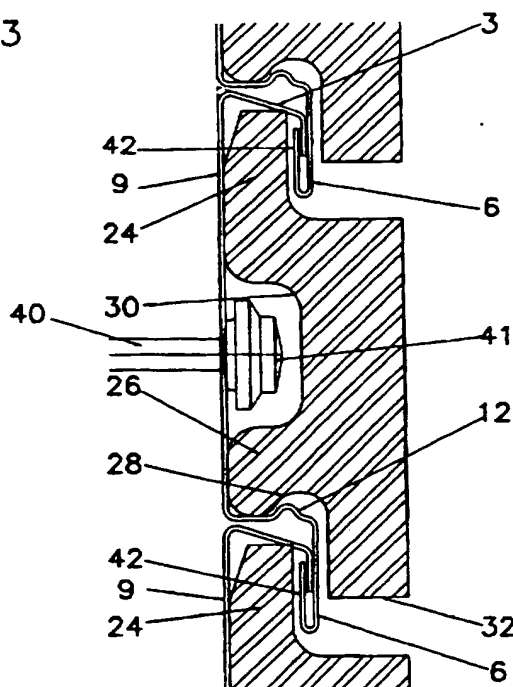
(56) Documents Cited
GB 2319543 A GB 2280690 A GB 2159848 A
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(58) Field of Search
UK CL (Edition Q) **E1D DLEKG DLEKH DLEKN**
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(54) Abstract Title
Improved cladding system

(57) A method of hanging tiles comprising fitting a surface to be clad with horizontally extending elongate supports each having an upper flange 3 having a downwardly extending lip 4 defining an open bottomed groove 42. A lower flange has a series of tile retention pips 12 or a bead extending along its surface. The tiles have flanges 24 projecting upwardly from their upper edge, the flanges being spaced from the front surfaces of the tiles. The tiles further have ribs 26 extending horizontally along a lower region of their rear surfaces. The flanges 24 are offered up into the groove 42 during the assembly and the ribs 26 retained behind the pips or beads 12 following assembly. The tiles may simulate brickwork and as such the gaps between the tiles are pointed after assembly.

FIG 3



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

IMPROVEMENTS IN CLADDING

Although framed buildings may be erected relatively cheaply and quickly in comparison with buildings constructed using conventional brick-laying techniques, the appearance of a conventional brick building is often preferred. The present proposal concerns a method of simulating a brick wall, and may be employed to clad a wall of a framed building or other structure.

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In the drawings:-

Figure 1 is a dimensioned vertical section through a tile support,

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Figure 2 is a dimensioned vertical section through a single tile used to simulate a brick,

Figure 3 is a vertical section through tiles supported on tile supports,

Figure 3A is a view similar to Figure 3 but showing a modified construction of tile and tile support, and

Figure 4 is a front elevation showing an array of tiles simulating a brick wall to illustrate pip spacing.

Referring to Figure 1, a tile support is formed by folding a metallic strip into the cross-sectional shape shown. The strip may be formed from aluminium, aluminium alloy or other suitable materials. Considering the strip to extend horizontally with its horizontal centre line perpendicular to the plane of the paper, it will be seen to have a downwardly inclined flange 3 along its upper edge and a horizontal flange 5 along its lower edge.

Both flanges extend from what will be regarded herein as the front side of the support. The flange 3 terminates in a depending lip 4. The flange 5 terminates in a depending hook-shaped profile 6, which defines a channel 8 opening upwardly on its rear side. The web 9 of the strip has a horizontal score line 10 to facilitate drilling screw holes. Pips 12 are pressed upwards from the flange 5 at intervals. At least one of the flanges is sprung relative to the web.

10 The support may be cut to the same length as the wall to be clad, or a plurality of supports may be arranged end to end.

15 A tile to be mounted on the support is of generally rectangular shape in elevation (as shown in Figure 4). The tile may be manufactured from clay, cement or synthetic materials. Considering the tile to extend horizontally with its horizontal centre line

20 perpendicular to the plane of the paper, it has the vertical cross-sectional shape shown in Figure 2. The main body portion 20 of the tile has a front surface 22 which is dimensioned to correspond to the major dimensions of the brick to be simulated. A first flange 24 extends upwardly from the body 20 throughout the length of the tile with the front face of the flange spaced rearwardly from the tile face 22. The flange 24 terminates in an upper edge 25 and its rear surface is bevelled where it meets edge 25. A rib 26 extends horizontally the length of the rear side of the tile at a position spaced from the lower edge of the tile equal to approximately one-third of the height of front face 22. The rib is shaped to define an undercut groove 28 in its lower surface. A groove 30 is defined between the flange 24 and rib 26. The tile extends downwards from the rib

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26 to terminate in a lower, horizontal edge 32. The rear faces of the flange 24 and rib 26 lie in the same plane. It is not essential for the flange 24 and rib 26 to extend the length of the tile and each may be of
5 discontinuous form, so as to constitute spaced ribs.

The preferred vertical cross-sectional dimensions of the tile and tile support are indicated in Figures 1 and 2 in millimetres purely by way of example. The horizontally
10 extending edges of the tile are rounded and bevelled as shown to facilitate hanging.

Referring now to Figure 3, a wall or other support surface is clad by first fixing to it rows of the tile
15 supports shown in Figure 1, one above the other, with the lip 4 of an upper support interfitted with the groove 8 of the support immediately below it. Conveniently the supports are fitted into place one after another by screws or bolts 40 screwed into the wall and passed
20 through holes drilled in the webs of the supports along the line 10. After one support is fixed into place, the lip 4 is interfitted with the groove 8 of the next adjacent support which is then similarly screwed or bolted into place, assuming that the supports are fitted
25 starting from the bottom of the wall. It is of course possible to fix the supports in reverse order, starting at the top of the wall and ending at the bottom.

The tiles may be fitted by offering up the flanges 24 of
30 the lowest row of tiles to the groove 42 defined by the profile 6 and web 9. The flange 24 of each tile may be used to press the flange 3 upwards to allow the bottom of rib 26 to be moved past the pips 12 and bring the tiles into the position shown in Figure 3. In this position
35 the head 41 of screw or bolt 40 is received within the

groove 30, and the pips 12 are received within the groove 28 and restrain the tile against slipping out. Flange 3 provides a spring force which presses the tile downwards. The adjacent rows of tiles are vertically spaced from one another by the conventional distance used in brick laying, as are the tiles in each row. The tiles do not contact one another, but the body portion of each tile projects downwards so as to overlap the flange 24 of the tile or tiles immediately below it and the overlying interfitting portions of the supports. The gaps between the tiles may be pointed in the ordinary way.

Each of the pips 12 may have a length of 10mm, and the inter-pip spacing may be selected to give the most suitable result. Figure 4 illustrates the relationship between tiles and pips at various different possible inter-pip spacings ranging from 50mm to 115mm, the optimum spacing being 95mm. A greater spacing risks insufficient support for the row of tiles, whereas lesser spacing involves unnecessary working of the strip. Instead of using pips to retain the tiles it is possible to provide the flange 5 with a continuous bead, but this involves the risk of water accumulating behind the bead.

Figure 3A is a view similar to Figure 3 but showing modified tiles and strips. In particular, the flange 24 is shorter and the lower edge 32 of the tile is closer to the rib 26 than in the case of the tile shown in Figures 2 and 3. In consequence, the lower edge 32 of each tile is at substantially the same level or slightly above the upper edges 25 of the flanges 24 of the tiles in the next adjacent lower row. This arrangement facilitates removal and replacement of damaged tiles. To take account of the fact that there is a reduced gap between the groove 28 of each tile and the upper edges 33 of the tiles in the next

adjacent lower row, the hook-shaped profiles 6 of the strips are also made shorter.

5 Compared with existing systems, the present invention provides a superior method of simulating conventional brick walls. In particular, the invention provides the following advantages:-

- 10 a) a mechanical fixing for the tiles so as to eliminate weather-reliant processes such as bonding,
- b) weather-proofing of the support surface prior to fixing of the tiles,
- 15 c) removability of individual tiles if damaged,
- d) good impact-resistance as a result of the thickness of the tiles and their intimate contact with the support structure,
- 20 e) installation by unskilled labour because the tile supports are self-aligning and accurate measurements do not need to be taken, and
- 25 f) location of each tile within the tile support is independent of other tiles so that the system can accommodate the tolerances inherent in the manufacture of clay components.
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Substantially the entire area of that part of the support surface to be clad with tiles is covered with the interlocking tile supports. This procedure increases the speed at which a building may be clad. Moreover, because
35 the supports are made from metal and interfit so as to

leave no openings through which water may penetrate, they cooperate to provide a waterproof shield within the tile cladding. The supports may be fixed by means other than screwing, for example by nailing, clipping or fixing to projecting studs. Within the scope of the invention it is not essential for all of the tiles in a row to simulate bricks.

In an alternative construction, the upper edge of each tile support is unprofiled, and the lower edge is bent so as to form a flange and define the pips 12 and the sprung portion 3, thereby to support and retain the lower edges of one row of tiles and retain the upper edges of another row of tiles. The edge of the sprung portion bears against the upper edge of the adjacent strip to prevent water penetration. The upper edges of the uppermost row of tiles may be retained by a separate retaining strip.

CLAIMS

1. A method of cladding a structure so as to simulate a brick wall, comprising fixing to the structure a plurality of horizontally extending metal strips, one above the other, each strip having forwardly extending flanges along its horizontal edges, clipping into place a row of tiles between the flanges, at least some of the tiles simulating bricks, and pointing the gaps between the tiles.
2. A method as claimed in claim 1, wherein the upper flange of each strip (save for the uppermost strip) interlocks with the lower flange of the next adjacent upper strip.
3. A clad structure which simulates a brick wall, comprising a plurality of horizontally extending metal strips fixed to the structure one above the other, each strip having forwardly extending flanges along its upper and lower edges, at least a portion of the upper flange of each strip extending downwardly and at least a portion of the lower flange of each strip extending upwardly, a row of tiles between the flanges, at least some of the tiles simulating bricks, the gaps between the tiles being pointed.
4. A method of hanging tiles wherein a structure to be clad is provided with horizontally extending, elongate supports disposed one above another, said supports having web portions secured to the structure and providing vertically spaced-apart pairs of flanges projecting away from the structure, an upper one of said flanges having a downwardly extending lip defining an open-bottomed groove, a lower one of said flanges having

a tile retention protrusion or protrusions on its upper surface; the tiles being fitted to the supports and having flanges projecting upwardly from their upper edges, the upwardly projecting flanges being spaced from the front surfaces of the tiles, the tiles also having
 5 ribs projecting from lower regions of their rear surfaces; said upwardly projecting flanges of the tiles being offered up into the groove during assembly and the ribs being retained behind the protrusion or protrusions
 10 following assembly, whereby part of each tile in the rows above the lowest row is spaced from a part or parts of a tile or tiles in a row immediately below it.

5. A method of simulating a brick wall, including
 15 pointing the gaps between tiles hung as claimed in claim 4.

6. A clad structure comprising elongate supports disposed one above another, said supports providing
 20 vertically spaced-apart flanges projecting away from the structure, including an upper flange having a downwardly extending lip defining with a web of a support an open-bottomed groove, a lower flange having a tile retention protrusion or protrusions on its upper surface, wherein
 25 the tiles have flanges projecting upwardly from their upper edge, the upwardly projecting flanges being spaced from the front surfaces of the tiles, the tiles further having ribs projecting from lower regions of the rear surfaces of the tiles; said upwardly projecting flanges
 30 being received in the groove and the ribs being retained behind the protrusion or protrusions, whereby each tile in rows above the lowest row is spaced from the next adjacent tile or tiles in a row immediately below it.

7. A clad structure as claimed in claim 6, wherein the gaps between the tiles are pointed.
8. A clad structure as claimed in any claims 3, 6 or 7, wherein the horizontal and vertical dimensions of the front edges of the tiles correspond to those of conventional bricks.
9. In combination an elongate support having a web and vertically spaced-apart flanges projecting from the longer edges of the support, namely a first flange having a lip which defines a groove and a second flange having a tile retention protrusion or protrusions on its surface facing the first flange; and tiles have flanges projecting from one edge, the flanges of the tiles being spaced from the front surfaces of the tiles, the tiles further having ribs projecting rearwardly from lower regions of their rear surfaces.
10. A method of cladding a structure so as to simulate a brick wall, comprising fixing to the structure a plurality of horizontally extending metal strips, one above the other, clipping tiles into place between flanges projecting from horizontal edges of the strips, and pointing gaps between the tiles.
11. The combination claimed in claim 9 substantially as hereinbefore described with reference to Figures 1 to 3 or as modified by Figure 3A of the drawings.
12. A method substantially as hereinbefore described with reference to the accompanying drawings.

13. A clad structure simulating a brick wall substantially as hereinbefore described with reference to and as illustrated in Figures 1 to 3 and 4 or as modified by Figure 3A of the accompanying drawings.

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The Patent Office

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Claims searched: 13

Examiner: David McWilliams
Date of search: 4 March 1999

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK CI (Ed.Q): E1D: DLEKG, DLEKH, DLEKN
Int CI (Ed.6): E04F

Other:

Documents considered to be relevant:

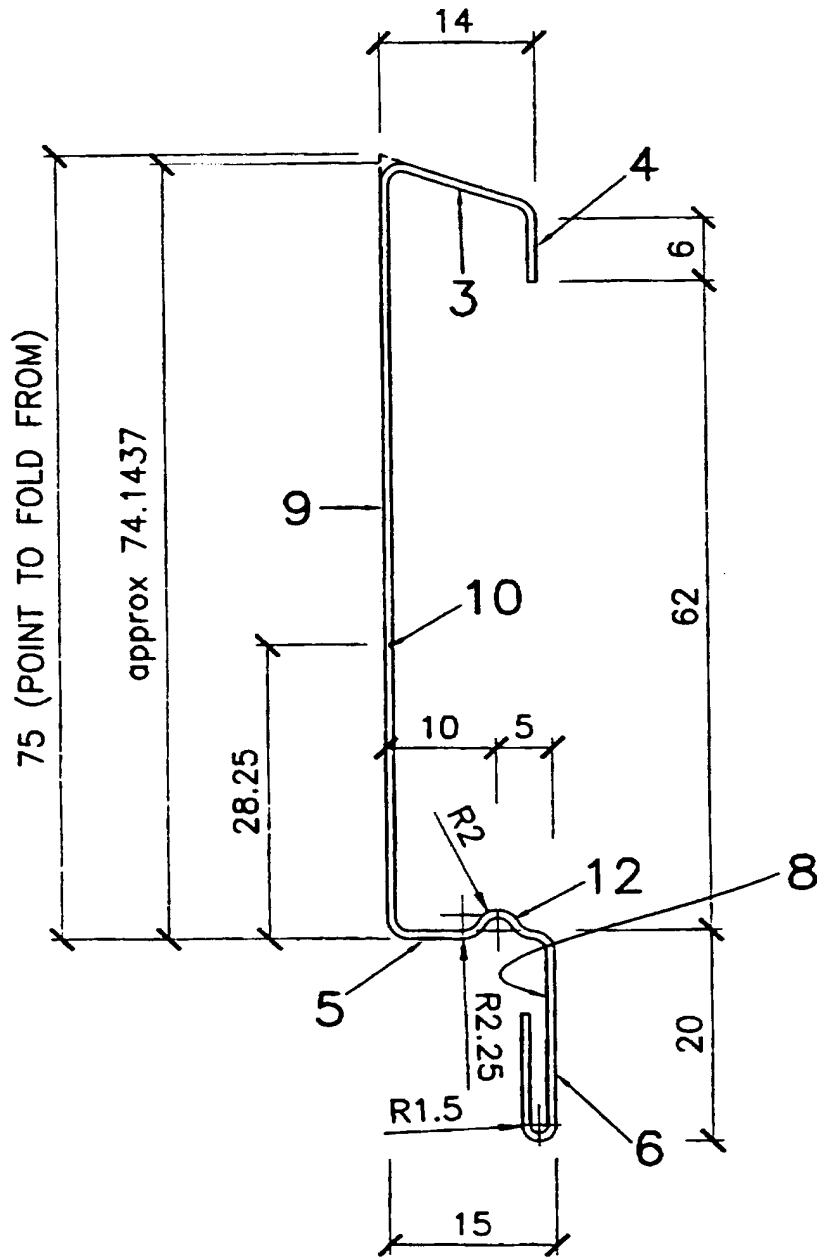
Category	Identity of document and relevant passage		Relevant to claims
X,P	GB2319543A	TERRAPIN (see Fig 1 and page 3 ln 3-5)	10
Y	GB2280690A	EPSICON (see page 3 ln 24-26)	1,2,3,9,10
Y	GB2159848A	DU NORD (see Figs.1 +4)	1,2,3,9,10
Y	GB2155970A	NIPPON LMC. (see Figs.3 +5)	1,2,3,9,10
Y	US4238915	YOSHIDA (see page 4 ln 45-48)	1,2,3,9,10

X Document indicating lack of novelty or inventive step
Y Document indicating lack of inventive step if combined with one or more other documents of same category.

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A Document indicating technological background and/or state of the art.
P Document published on or after the declared priority date but before the filing date of this invention.
E Patent document published on or after, but with priority date earlier than, the filing date of this application.

FIG 1



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FIG 2

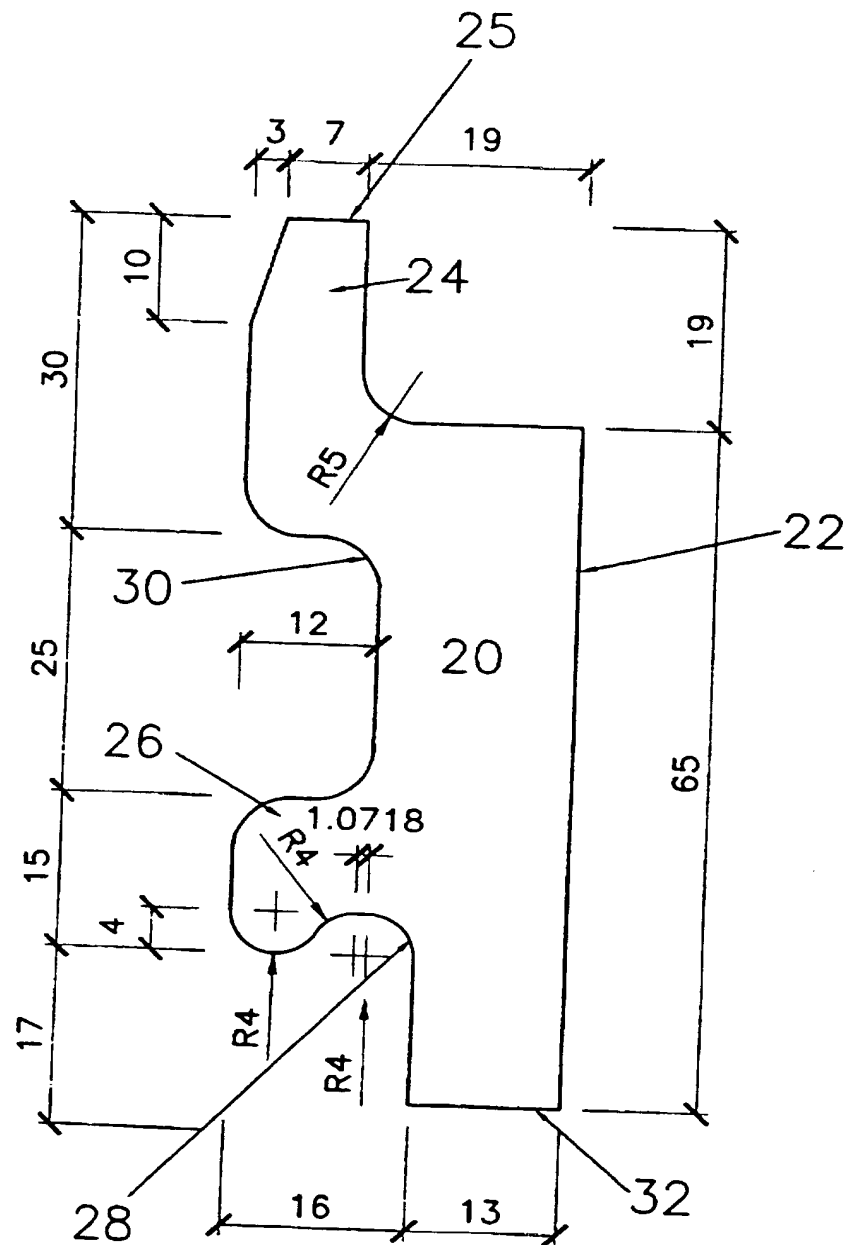
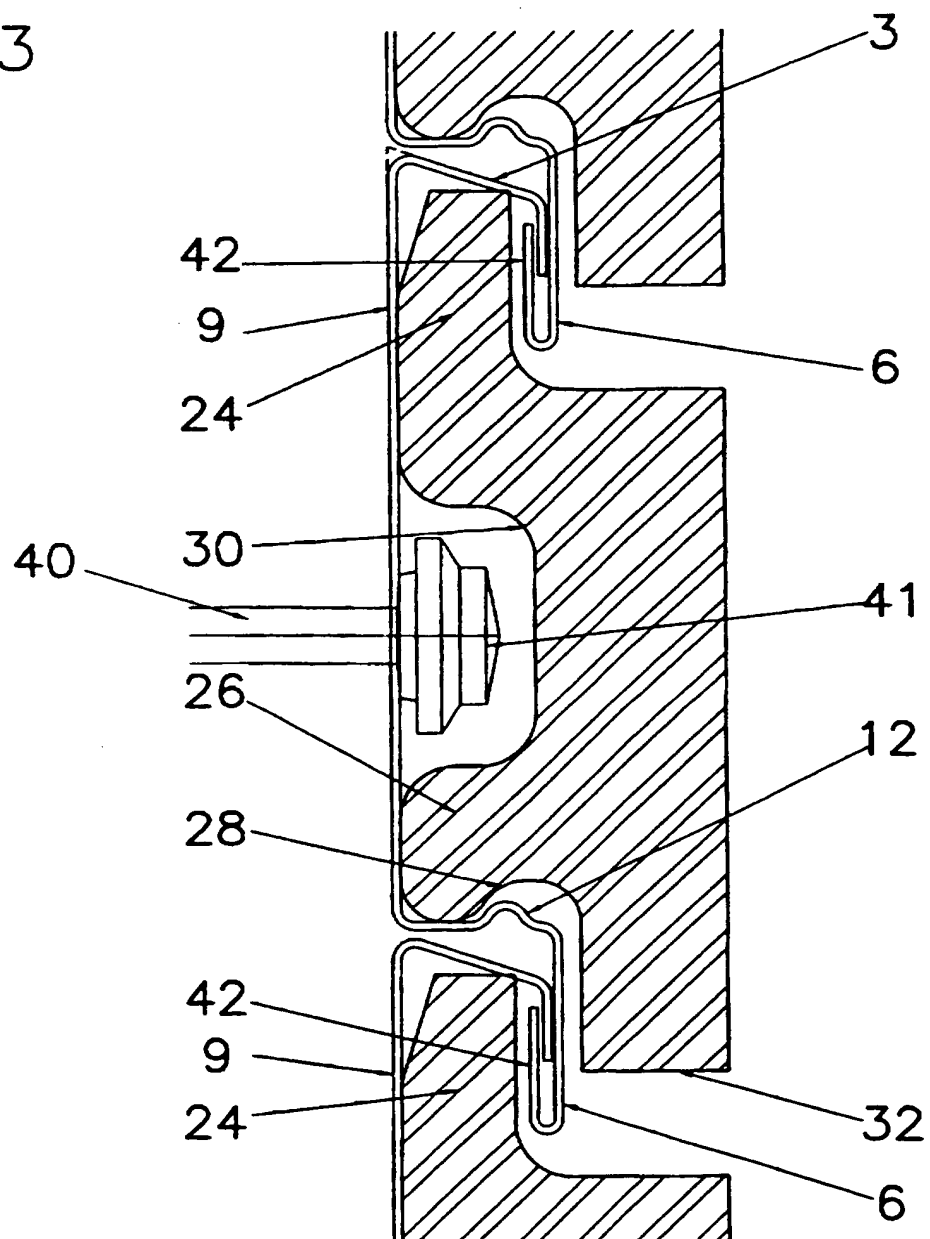


FIG 3



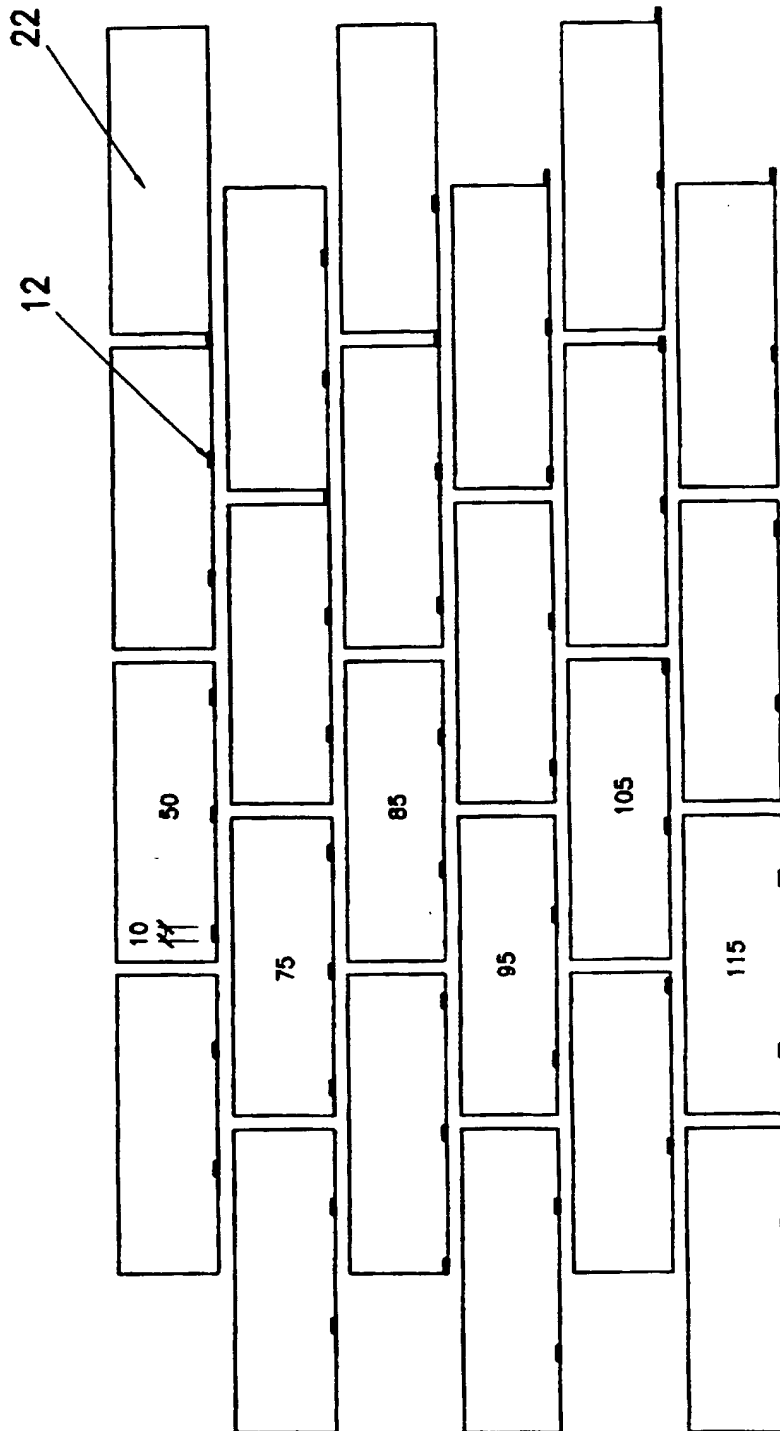


FIG 4

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